

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	55784	polyhydroxyalkanoate\$ or polyhydroxy alkanoate\$ or pha\$1	US-PGPUB; USPAT	ADJ	OFF	2008/01/22 14:30
L2	19301	xylose or xylan	US-PGPUB; USPAT	ADJ	OFF	2008/01/22 14:30
L3	52	1 same 2	US-PGPUB; USPAT	ADJ	OFF	2008/01/22 14:31
L4	1920	levulinic acid	US-PGPUB; USPAT	ADJ	OFF	2008/01/22 14:37
L5	9	1 same 4	US-PGPUB; USPAT	ADJ	OFF	2008/01/22 14:42
L6	731	1 and 2	US-PGPUB; USPAT	ADJ	OFF	2008/01/22 14:38
L7	56	6 and hemicellulos\$	US-PGPUB; USPAT	ADJ	OFF	2008/01/22 14:43
L8	61	1 and 4	US-PGPUB; USPAT	ADJ	OFF	2008/01/22 14:42
L9	4135	2 same carbon	US-PGPUB; USPAT	ADJ	OFF	2008/01/22 14:42
L10	127	1 and 9	US-PGPUB; USPAT	ADJ	OFF	2008/01/22 14:42
L11	128	1 and hemicellulos\$	US-PGPUB; USPAT	ADJ	OFF	2008/01/22 14:43
L12	7	10 and 11	US-PGPUB; USPAT	ADJ	OFF	2008/01/22 14:45
L13	13	8 and (2 or hemicellulos\$)	US-PGPUB; USPAT	ADJ	OFF	2008/01/22 14:44

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	55784	polyhydroxyalkanoate\$ or polyhydroxy alkanoate\$ or pha\$1	US-PGPUB; USPAT	ADJ	OFF	2008/01/22 14:48
L2	6423	(cosubstrat\$ or levulinic or propion\$10) near10 (addition\$ or second\$10 or supplement\$)	US-PGPUB; USPAT	ADJ	OFF	2008/01/22 14:52
L3	195	1 and 2	US-PGPUB; USPAT	ADJ	OFF	2008/01/22 14:53
L4	28	1 same 2	US-PGPUB; USPAT	ADJ	OFF	2008/01/22 14:54

* * * * * STN Columbus * * * * *

FILE 'HOME' ENTERED AT 17:15:26 ON 22 JAN 2008

=> fil .bec

COST IN U.S. DOLLARS.

SINCE FILE	TOTAL
ENTRY	SESSION
0.21	0.21

FULL ESTIMATED COST

FILES 'MEDLINE, SCISEARCH, LIFESCI, BIOTECHDS, BIOSIS, EMBASE, HCAPLUS, NTIS, ESBIODBASE, BIOTECHNO, WPIDS' ENTERED AT 17:15:59 ON 22 JAN 2008
ALL COPYRIGHTS AND RESTRICTIONS APPLY. SEE HELP USAGETERMS FOR DETAILS.

11 FILES IN THE FILE LIST

=> s polyhydroxyalkano? or polyhydroxy alkano? or pha#

FILE 'MEDLINE'

642 POLYHYDROXYALKANO?

219 POLYHYDROXY

1181 ALKANO?

8 POLYHYDROXY ALKANO?

(POLYHYDROXY (W) ALKANO?)

16295 PHA#

L1 16444 POLYHYDROXYALKANO? OR POLYHYDROXY ALKANO? OR PHA#

FILE 'SCISEARCH'

1517 POLYHYDROXYALKANO?

707 POLYHYDROXY

5906 ALKANO?

21 POLYHYDROXY ALKANO?

(POLYHYDROXY (W) ALKANO?)

10560 PHA#

L2 11187 POLYHYDROXYALKANO? OR POLYHYDROXY ALKANO? OR PHA#

FILE 'LIFESCI'

562 POLYHYDROXYALKANO?

79 "POLYHYDROXY"

437 ALKANO?

9 POLYHYDROXY ALKANO?

("POLYHYDROXY" (W) ALKANO?)

6427 PHA#

L3 6563 POLYHYDROXYALKANO? OR POLYHYDROXY ALKANO? OR PHA#

FILE 'BIOTECHDS'

867 POLYHYDROXYALKANO?

158 POLYHYDROXY

710 ALKANO?

41 POLYHYDROXY ALKANO?

(POLYHYDROXY (W) ALKANO?)

976 PHA#

L4 1392 POLYHYDROXYALKANO? OR POLYHYDROXY ALKANO? OR PHA#

FILE 'BIOSIS'

1017 POLYHYDROXYALKANO?

468 POLYHYDROXY

2560 ALKANO?

20 POLYHYDROXY ALKANO?

(POLYHYDROXY (W) ALKANO?)

17692 PHA#

L5 18024 POLYHYDROXYALKANO? OR POLYHYDROXY ALKANO? OR PHA#

FILE 'EMBASE'

859 POLYHYDROXYALKANO?

261 "POLYHYDROXY"

3658 ALKANO?

13 POLYHYDROXY ALKANO?
("POLYHYDROXY" (W) ALKANO?)
15858 PHA#
L6 16102 POLYHYDROXYALKANO? OR POLYHYDROXY ALKANO? OR PHA#

FILE 'HCAPLUS'

2364 POLYHYDROXYALKANO?
7245 POLYHYDROXY
38350 ALKANO?
63 POLYHYDROXY ALKANO?
(POLYHYDROXY (W) ALKANO?)
15617 PHA#
L7 16535 POLYHYDROXYALKANO? OR POLYHYDROXY ALKANO? OR PHA#

FILE 'NTIS'

5 POLYHYDROXYALKANO?
54 POLYHYDROXY
184 ALKANO?
0 POLYHYDROXY ALKANO?
(POLYHYDROXY (W) ALKANO?)
528 PHA#
L8 530 POLYHYDROXYALKANO? OR POLYHYDROXY ALKANO? OR PHA#

FILE 'ESBIOBASE'

713 POLYHYDROXYALKANO?
123 POLYHYDROXY
700 ALKANO?
19 POLYHYDROXY ALKANO?
(POLYHYDROXY (W) ALKANO?)
4441 PHA#
L9 4607 POLYHYDROXYALKANO? OR POLYHYDROXY ALKANO? OR PHA#

FILE 'BIOTECHNO'

527 POLYHYDROXYALKANO?
45 POLYHYDROXY
528 ALKANO?
7 POLYHYDROXY ALKANO?
(POLYHYDROXY (W) ALKANO?)
4715 PHA#
L10 4869 POLYHYDROXYALKANO? OR POLYHYDROXY ALKANO? OR PHA#

FILE 'WPIDS'

569 POLYHYDROXYALKANO?
6838 POLYHYDROXY
49126 ALKANO?
202 POLYHYDROXY ALKANO?
(POLYHYDROXY (W) ALKANO?)
1404 PHA#
L11 1888 POLYHYDROXYALKANO? OR POLYHYDROXY ALKANO? OR PHA#

TOTAL FOR ALL FILES

L12 98141 POLYHYDROXYALKANO? OR POLYHYDROXY ALKANO? OR PHA#

=> s xylose or xylan or hemicellulos?

FILE 'MEDLINE'

7443 XYLOSE
1787 XYLAN
1266 HEMICELLULOS?
L13 9757 XYLOSE OR XYLAN OR HEMICELLULOS?

FILE 'SCISEARCH'

7669 XYLOSE
2894 XYLAN
4467 HEMICELLULOS?
L14 13253 XYLOSE OR XYLAN OR HEMICELLULOS?

FILE 'LIFESCI'
 3245 XYLOSE
 2260 XYLAN
 1050 HEMICELLULOS?
 L15 5684 XYLOSE OR XYLAN OR HEMICELLULOS?

FILE 'BIOTECHDS'
 3432 XYLOSE
 1764 XYLAN
 1290 HEMICELLULOS?
 L16 5385 XYLOSE OR XYLAN OR HEMICELLULOS?

FILE 'BIOSIS'
 12529 XYLOSE
 3459 XYLAN
 5790 HEMICELLULOS?
 L17 19703 XYLOSE OR XYLAN OR HEMICELLULOS?

FILE 'EMBASE'
 5890 XYLOSE
 2857 XYLAN
 1269 HEMICELLULOS?
 L18 9018 XYLOSE OR XYLAN OR HEMICELLULOS?

FILE 'HCAPLUS'
 28498 XYLOSE
 7317 XYLAN
 14790 HEMICELLULOS?
 L19 44959 XYLOSE OR XYLAN OR HEMICELLULOS?

FILE 'NTIS'
 196 XYLOSE
 57 XYLAN
 204 HEMICELLULOS?
 L20 379 XYLOSE OR XYLAN OR HEMICELLULOS?

FILE 'ESBIOBASE'
 3011 XYLOSE
 1367 XYLAN
 1414 HEMICELLULOS?
 L21 5025 XYLOSE OR XYLAN OR HEMICELLULOS?

FILE 'BIOTECHNO'
 2507 XYLOSE
 1961 XYLAN
 849 HEMICELLULOS?
 L22 4604 XYLOSE OR XYLAN OR HEMICELLULOS?

FILE 'WPIDS'
 3287 XYLOSE
 723 XYLAN
 1789 HEMICELLULOS?
 L23 5427 XYLOSE OR XYLAN OR HEMICELLULOS?

TOTAL FOR ALL FILES
 L24 123194 XYLOSE OR XYLAN OR HEMICELLULOS?

=> s l12 and l24
 FILE 'MEDLINE'
 L25 11 L1 AND L13

FILE 'SCISEARCH'
 L26 18 L2 AND L14

FILE 'LIFESCI'
L27 6 L3 AND L15

FILE 'BIOTECHDS'
L28 15 L4 AND L16

FILE 'BIOSIS'
L29 19 L5 AND L17

FILE 'EMBASE'
L30 14 L6 AND L18

FILE 'HCAPLUS'
L31 41 L7 AND L19

FILE 'NTIS'
L32 1 L8 AND L20

FILE 'ESBIOBASE'
L33 6 L9 AND L21

FILE 'BIOTECHNO'
L34 7 L10 AND L22

FILE 'WPIDS'
L35 24 L11 AND L23

TOTAL FOR ALL FILES
L36 162 L12 AND L24

=> s levulinic acid

FILE 'MEDLINE'
1520 LEVULINIC
1524685 ACID
L37 360 LEVULINIC ACID
(LEVULINIC(W)ACID)

FILE 'SCISEARCH'
381 LEVULINIC
1255073 ACID
L38 348 LEVULINIC ACID
(LEVULINIC(W)ACID)

FILE 'LIFESCI'
88 "LEVULINIC"
339578 "ACID"
L39 85 LEVULINIC ACID
("LEVULINIC" (W) "ACID")

FILE 'BIOTECHDS'
86 LEVULINIC
155368 ACID
L40 83 LEVULINIC ACID
(LEVULINIC(W)ACID)

FILE 'BIOSIS'
2455 LEVULINIC
1511945 ACID
L41 2418 LEVULINIC ACID
(LEVULINIC(W)ACID)

FILE 'EMBASE'
389 "LEVULINIC"
1536009 "ACID"
L42 382 LEVULINIC ACID

("LEVULINIC" (W) "ACID")

FILE 'HCAPLUS'

4247 LEVULINIC
4515363 ACID

L43 3985 LEVULINIC ACID
(LEVULINIC(W)ACID)

FILE 'NTIS'

17 LEVULINIC
45122 ACID

L44 15 LEVULINIC ACID
(LEVULINIC(W)ACID)

FILE 'ESBIOBASE'

99 LEVULINIC
395980 ACID

L45 92 LEVULINIC ACID
(LEVULINIC(W)ACID)

FILE 'BIOTECHNO'

85 LEVULINIC
349810 ACID

L46 85 LEVULINIC ACID
(LEVULINIC(W)ACID)

FILE 'WPIDS'

507 LEVULINIC
1126145 ACID

L47 474 LEVULINIC ACID
(LEVULINIC(W)ACID)

TOTAL FOR ALL FILES

L48 8327 LEVULINIC ACID

=> s l12 and l48

FILE 'MEDLINE'

L49 5 L1 AND L37

FILE 'SCISEARCH'

L50 11 L2 AND L38

FILE 'LIFESCI'

L51 4 L3 AND L39

FILE 'BIOTECHDS'

L52 7 L4 AND L40

FILE 'BIOSIS'

L53 7 L5 AND L41

FILE 'EMBASE'

L54 4 L6 AND L42

FILE 'HCAPLUS'

L55 22 L7 AND L43

FILE 'NTIS'

L56 0 L8 AND L44

FILE 'ESBIOBASE'

L57 6 L9 AND L45

FILE 'BIOTECHNO'

L58 4 L10 AND L46

FILE 'WPIDS'
L59 4 L11 AND L47

TOTAL FOR ALL FILES
L60 74 L12 AND L48

=> s (l36 or l60) not 2004-2008/py

FILE 'MEDLINE'
2611376 2004-2008/PY
(20040000-20089999/PY)
L61 10 (L25 OR L49) NOT 2004-2008/PY

FILE 'SCISEARCH'
4755321 2004-2008/PY
(20040000-20089999/PY)
L62 16 (L26 OR L50) NOT 2004-2008/PY

FILE 'LIFESCI'
551380 2004-2008/PY
L63 7 (L27 OR L51) NOT 2004-2008/PY

FILE 'BIOTECHDS'
107093 2004-2008/PY
L64 14 (L28 OR L52) NOT 2004-2008/PY

FILE 'BIOSIS'
2218323 2004-2008/PY
L65 17 (L29 OR L53) NOT 2004-2008/PY

FILE 'EMBASE'
2284106 2004-2008/PY
L66 12 (L30 OR L54) NOT 2004-2008/PY

FILE 'HCAPLUS'
5230844 2004-2008/PY
L67 35 (L31 OR L55) NOT 2004-2008/PY

FILE 'NTIS'
63576 2004-2008/PY
L68 1 (L32 OR L56) NOT 2004-2008/PY

FILE 'ESBIOBASE'
1335729 2004-2008/PY
L69 7 (L33 OR L57) NOT 2004-2008/PY

FILE 'BIOTECHNO'
586 2004-2008/PY
L70 11 (L34 OR L58) NOT 2004-2008/PY

FILE 'WPIDS'
4428145 2004-2008/PY
L71 4 (L35 OR L59) NOT 2004-2008/PY

TOTAL FOR ALL FILES
L72 134 (L36 OR L60) NOT 2004-2008/PY

=> s (cosubstrat? or levulinic or propion?) (10a) (addition? or second? or supplement?)

FILE 'MEDLINE'
1002 COSUBSTRAT?
1520 LEVULINIC
31143 PROPION?
1082136 ADDITION?
875213 SECOND?

137597 SUPPLEMENT?
L73 788 (COSUBSTRAT? OR LEVULINIC OR PROPION?) (10A) (ADDITION? OR SECOND?
OR SUPPLEMENT?)

FILE 'SCISEARCH'

941 COSUBSTRAT?
381 LEVULINIC
27574 PROPION?
1289212 ADDITION?
914600 SECOND?
151669 SUPPLEMENT?
L74 932 (COSUBSTRAT? OR LEVULINIC OR PROPION?) (10A) (ADDITION? OR SECOND?
OR SUPPLEMENT?)

FILE 'LIFESCI'

473 COSUBSTRAT?
88 LEVULINIC
9542 PROPION?
318824 ADDITION?
183094 SECOND?
30379 SUPPLEMENT?
L75 398 (COSUBSTRAT? OR LEVULINIC OR PROPION?) (10A) (ADDITION? OR SECOND?
OR SUPPLEMENT?)

FILE 'BIOTECHDS'

277 COSUBSTRAT?
86 LEVULINIC
2827 PROPION?
49010 ADDITION?
38291 SECOND?
17177 SUPPLEMENT?
L76 205 (COSUBSTRAT? OR LEVULINIC OR PROPION?) (10A) (ADDITION? OR SECOND?
OR SUPPLEMENT?)

FILE 'BIOSIS'

1251 COSUBSTRAT?
2455 LEVULINIC
43483 PROPION?
1117539 ADDITION?
698686 SECOND?
206304 SUPPLEMENT?
L77 1361 (COSUBSTRAT? OR LEVULINIC OR PROPION?) (10A) (ADDITION? OR SECOND?
OR SUPPLEMENT?)

FILE 'EMBASE'

931 COSUBSTRAT?
389 LEVULINIC
37413 PROPION?
1014011 ADDITION?
694664 SECOND?
129843 SUPPLEMENT?
L78 675 (COSUBSTRAT? OR LEVULINIC OR PROPION?) (10A) (ADDITION? OR SECOND?
OR SUPPLEMENT?)

FILE 'HCAPLUS'

1902 COSUBSTRAT?
4247 LEVULINIC
141191 PROPION?
221462 ADDITION?
1642205 ADDN
536957 ADDNL
2253934 ADDITION?
(ADDITION? OR ADDN OR ADDNL)
1155353 SECOND?
.186836 SUPPLEMENT?

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L79      3489 (COSUBSTRAT? OR LEVULINIC OR PROPION?) (10A) (ADDITION? OR SECOND?
          OR SUPPLEMENT?)

FILE 'NTIS'
          9 COSUBSTRAT?
          17 LEVULINIC
          540 PROPION?
178735 ADDITION?
144720 SECOND?
28998 SUPPLEMENT?

L80      18 (COSUBSTRAT? OR LEVULINIC OR PROPION?) (10A) (ADDITION? OR SECOND?
          OR SUPPLEMENT?)

FILE 'ESBIOBASE'
          594 COSUBSTRAT?
          99 LEVULINIC
          8702 PROPION?
464980 ADDITION?
297457 SECOND?
52832 SUPPLEMENT?

L81      497 (COSUBSTRAT? OR LEVULINIC OR PROPION?) (10A) (ADDITION? OR SECOND?
          OR SUPPLEMENT?)

FILE 'BIOTECHNO'
          457 COSUBSTRAT?
          85 LEVULINIC
          6189 PROPION?
241683 ADDITION?
116613 SECOND?
18671 SUPPLEMENT?

L82      309 (COSUBSTRAT? OR LEVULINIC OR PROPION?) (10A) (ADDITION? OR SECOND?
          OR SUPPLEMENT?)

FILE 'WPIDS'
          47 COSUBSTRAT?
          507 LEVULINIC
          40324 PROPION?
656227 ADDITION?
137167 ADDN
780342 ADDITION?
          (ADDITION? OR ADDN)
1635096 SECOND?
109357 SEC
1727438 SECOND?
          (SECOND? OR SEC)
          72102 SUPPLEMENT?

L83      811 (COSUBSTRAT? OR LEVULINIC OR PROPION?) (10A) (ADDITION? OR SECOND?
          OR SUPPLEMENT?)

TOTAL FOR ALL FILES
L84      9483 (COSUBSTRAT? OR LEVULINIC OR PROPION?) (10A) (ADDITION? OR SECOND?
          OR SUPPLEMENT?)

=> s l12 and l84
FILE 'MEDLINE'
L85      6 L1 AND L73

FILE 'SCISEARCH'
L86      17 L2 AND L74

FILE 'LIFESCI'
L87      11 L3 AND L75

FILE 'BIOTECHDS'
L88      8 L4 AND L76

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FILE 'BIOSIS'
L89 9 L5 AND L77

FILE 'EMBASE'
L90 7 L6 AND L78

FILE 'HCAPLUS'
L91 20 L7 AND L79

FILE 'NTIS'
L92 1 L8 AND L80

FILE 'ESBIOBASE'
L93 12 L9 AND L81

FILE 'BIOTECHNO'
L94 10 L10 AND L82

FILE 'WPIDS'
L95 4 L11 AND L83

TOTAL FOR ALL FILES
L96 105 L12 AND L84

=> s l96 not 2004-2008/py

FILE 'MEDLINE'
2611376 2004-2008/PY
(20040000-20089999/PY)
L97 5 L85 NOT 2004-2008/PY

FILE 'SCISEARCH'
4755321 2004-2008/PY
(20040000-20089999/PY)
L98 14 L86 NOT 2004-2008/PY

FILE 'LIFESCI'
551380 2004-2008/PY
L99 10 L87 NOT 2004-2008/PY

FILE 'BIOTECHDS'
107093 2004-2008/PY
L100 7 L88 NOT 2004-2008/PY

FILE 'BIOSIS'
2218323 2004-2008/PY
L101 7 L89 NOT 2004-2008/PY

FILE 'EMBASE'
2284106 2004-2008/PY
L102 7 L90 NOT 2004-2008/PY

FILE 'HCAPLUS'
5230844 2004-2008/PY
L103 16 L91 NOT 2004-2008/PY

FILE 'NTIS'
63576 2004-2008/PY
L104 1 L92 NOT 2004-2008/PY

FILE 'ESBIOBASE'
1335729 2004-2008/PY
L105 10 L93 NOT 2004-2008/PY

FILE 'BIOTECHNO'

586 2004-2008/PY
L106 10 L94 NOT 2004-2008/PY

FILE 'WPIDS'

4428145 2004-2008/PY
L107 1 L95 NOT 2004-2008/PY

TOTAL FOR ALL FILES

L108 88 L96 NOT 2004-2008/PY

=> dup rem l108

PROCESSING COMPLETED FOR L108

L109 23 DUP REM L108 (65 DUPLICATES REMOVED)

=> d tot

L109 ANSWER 1 OF 23. MEDLINE on STN DUPLICATE 1
TI Production of poly(3-hydroxybutyrate-co-3-hydroxyvalerate) with high molar fractions of 3-hydroxyvalerate by a threonine-overproducing mutant of *Alcaligenes* sp. SH-69.
SO Biotechnology letters, (2003 May) Vol. 25, No. 9, pp. 665-70. Journal code: 8008051. ISSN: 0141-5492.
AU Choi Gang Guk; Kim Moo Woong; Kim Jeong-Yoon; Rhee Young Ha
AN 2003350281 MEDLINE

L109 ANSWER 2 OF 23 SCISEARCH COPYRIGHT (c) 2008 The Thomson Corporation on STN DUPLICATE 2
TI Microbial production of poly(hydroxyalkanoate)s from waste edible oils
SO GREEN CHEMISTRY, (FAL-WIN 2003) Vol. 5, No. 5, pp. 545-548. ISSN: 1463-9262.
AU Taniguchi I (Reprint); Kagotani K; Kimura Y
AN 2003:1028040 SCISEARCH

L109 ANSWER 3 OF 23 HCAPLUS COPYRIGHT 2008 ACS on STN
TI Production of polyhydroxyalkanoates by a mixed culture in a sequencing batch reactor: the use of propionate as carbon source
SO Mededelingen - Faculteit Landbouwkundige en Toegepaste Biologische Wetenschappen (Universiteit Gent) (2003), 68(2a), 109-114 CODEN: MFLBER; ISSN: 1373-7503
AU Lemos, P. C.; Serafim, L. S.; Santos, H.; Reis, M. A. M.
AN 2003:920144 HCAPLUS
DN 140:216241

L109 ANSWER 4 OF 23 MEDLINE on STN DUPLICATE 3
TI Effects of culture conditions on the production of polyhydroxyalkanoates by *Azotobacter chroococcum* H23 in media containing a high concentration of alpechin (wastewater from olive oil mills) as primary carbon source.
SO Journal of biotechnology, (2002 Aug 7) Vol. 97, No. 2, pp. 125-31. Journal code: 8411927. ISSN: 0168-1656.
AU Pozo C; Martinez-Toledo M V; Rodelas B; Gonzalez-Lopez J
AN 2002325377 MEDLINE

L109 ANSWER 5 OF 23 MEDLINE on STN DUPLICATE 4
TI Utilization of swine wastewater as a feedstock for the production of polyhydroxyalkanoates by *Azotobacter vinelandii* UWD.
SO Journal of bioscience and bioengineering, (2001) Vol. 91, No. 2, pp. 129-33. Journal code: 100888800. ISSN: 1389-1723.
AU Cho K; Ryu H W; Park C; Goodrich P R
AN 2005557272 MEDLINE

L109 ANSWER 6 OF 23 SCISEARCH COPYRIGHT (c) 2008 The Thomson Corporation on STN
TI Feeding strategy of propionic acid for production of poly(3-

- hydroxybutyrate-co-3-hydroxyvalerate) with *Ralstonia eutropha*
 SO BIOCHEMICAL ENGINEERING JOURNAL, (SEP 2001) Vol. 8, No. 2, pp. 103-110.
 ISSN: 1369-703X.
 AU Du G C C; Chen J; Yu J (Reprint); Lun S Y
 AN 2001:618525 SCISEARCH
- L109 ANSWER 7 OF 23 LIFESCI COPYRIGHT 2008 CSA on STN DUPLICATE 5
 TI A metabolic model for acetate uptake under anaerobic conditions by
 glycogen accumulating organisms: Stoichiometry, kinetics, and the effect
 of pH
 SO Biotechnology and Bioengineering [Biotechnol. Bioeng.], (20010000) vol.
 76, no. 1, pp. 17-31.
 ISSN: 0006-3592.
 AU Filipe, C.D.M.; Daigger, G.T.; Grady, C.P.L., Jr.
 AN 2002:11717 LIFESCI
- L109 ANSWER 8 OF 23 MEDLINE on STN DUPLICATE 6
 TI Characterization, seasonal occurrence, and diel fluctuation of
 poly(hydroxyalkanoate) in photosynthetic microbial mats.
 SO Applied and environmental microbiology, (2000 Oct) Vol. 66, No. 10, pp.
 4279-91.
 Journal code: 7605801. ISSN: 0099-2240.
 AU Rothermich M M; Guerrero R; Lenz R W; Goodwin S
 AN 2001032730 MEDLINE
- L109 ANSWER 9 OF 23 SCISEARCH COPYRIGHT (c) 2008 The Thomson Corporation on
 STN DUPLICATE 7
 TI Oleic acid improves poly(3-hydroxybutyrate-co-3-hydroxyvalerate)
 production by *Ralstonia eutropha* in inverted sugar and propionic acid
 SO BIOTECHNOLOGY LETTERS, (OCT 2000) Vol. 22, No. 20, pp. 1635-1638.
 ISSN: 0141-5492.
 AU Marangoni C; Furigo A; de Aragao G M F (Reprint)
 AN 2000:793886 SCISEARCH
- L109 ANSWER 10 OF 23 MEDLINE on STN DUPLICATE 8
 TI Sequence of PHA synthase gene from two strains of *Rhodospirillum*
rubrum and in vivo substrate specificity of four PHA synthases
 across two heterologous expression systems.
 SO Applied microbiology and biotechnology, (2000 Apr) Vol. 53, No. 4, pp.
 420-9.
 Journal code: 8406612. ISSN: 0175-7598.
 AU Clemente T; Shah D; Tran M; Stark D; Padgett S; Dennis D; Bruckner K;
 Steinbuchel A; Mitsky T
 AN 2000261043 MEDLINE
- L109 ANSWER 11 OF 23 BIOTECHDS COPYRIGHT 2008 THE THOMSON CORP. on STN
 TI Regulating the molar fraction of 4-hydroxybutyrate in
 poly(3-hydroxybutyrate-4-hydroxybutyrate) biosynthesis by *Ralstonia*
eutropha using propionate as a stimulator;
 poly-beta-hydroxybutyrate and poly-gamma-hydroxybutyrate copolymer
 production
 SO J.Ferment.Bioeng.; (2000) 89, 4, 380-83
 CODEN: JFBIEX ISSN: 1389-1723
 AU Lee Y H; Kang M S; Jung Y
 AN 2000-08862 BIOTECHDS
- L109 ANSWER 12 OF 23 BIOTECHDS COPYRIGHT 2008 THE THOMSON CORP. on STN
 TI Bio-flocculation waste-water treatment utilizing synthesized
 microorganisms;
 waste-disposal and poly-beta-hydroxy-alkanoate production
 AU Zheng Y; Zhong Q; Li J
 AN 2000-00838 BIOTECHDS
 PI CN 1225338 11 Aug 1999
- L109 ANSWER 13 OF 23 SCISEARCH COPYRIGHT (c) 2008 The Thomson Corporation on

STN DPLICATE 9

TI Multiple beta-ketothiolases mediate poly(beta-hydroxyalkanoate) copolymer synthesis in *Ralstonia eutropha*

SO JOURNAL OF BACTERIOLOGY, (APR 1998) Vol. 180, No. 8, pp. 1979-1987.
ISSN: 0021-9193.

AU Slater S (Reprint); Houmiel K L; Tran M; Mitsky T A; Taylor N B; Padgett S R; Gruys K J

AN 1998:293870 SCISEARCH

L109 ANSWER 14 OF 23 SCISEARCH COPYRIGHT (c) 2008 The Thomson Corporation on STN DPLICATE 10

TI Production of poly(beta-hydroxybutyrate-beta-hydroxyvalerate) copolymer from sugars by *Azotobacter salinestris*

SO APPLIED MICROBIOLOGY AND BIOTECHNOLOGY, (JUL 1997) Vol. 48, No. 1, pp. 88-93.
ISSN: 0175-7598.

AU Page W J (Reprint); Bhanthumnavin N; Manchak J; Ruman M

AN 1997:601188 SCISEARCH

L109 ANSWER 15 OF 23 WPIDS COPYRIGHT 2008 THE THOMSON CORP on STN

TI Production of poly-3-hydroxyalkanoate by culture of *Alcaligenes* - on aliphatic carboxylic acid or derivative thereof of low water solubility

PI WO 9625509 A1 19960822 (199639)* EN 16[0]

RW: AT BE CH DE DK EA ES FR GB GR IE IT KE LS LU MC MW NL OA PT SD SE SZ UG

W: AL AM AT AU AZ BB BG BR BY CA CH CN CZ DE DK EE ES FI GB GE HU IS JP KE KG KP KR KZ LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK TJ TM TR TT UA UG US UZ VN

AU 9646315 A 19960904 (199705) EN

EP 809706 A1 19971203 (199802) EN [0]

R: AT BE CH DE DK ES FR GB GR IE IT LI LU MC NL PT SE

FI 9703365 A 19971015 (199802) FI

JP 11500008 W 19990106 (199911) JA 15

US 5871980 A 19990216 (199914) EN

IN NAYLOR L A; WOOD J C

L109 ANSWER 16 OF 23 SCISEARCH COPYRIGHT (c) 2008 The Thomson Corporation on STN

TI Microbial synthesis of poly(beta-hydroxyalkanoates) containing fluorinated side-chain substituents

SO MACROMOLECULES, (17 JUN 1996) Vol. 29, No. 13, pp. 4572-4581.
ISSN: 0024-9297.

AU Kim O (Reprint); Gross R A; Hammar W J; Newmark R A

AN 1996:466412 SCISEARCH

L109 ANSWER 17 OF 23 SCISEARCH COPYRIGHT (c) 2008 The Thomson Corporation on STN DPLICATE 11

TI Effect of levulinic acid on cell growth and poly-beta-hydroxyalkanoate production by *Alcaligenes* sp SH-69

SO BIOTECHNOLOGY LETTERS, (FEB 1996) Vol. 18, No. 2, pp. 219-224.
ISSN: 0141-5492.

AU Jang J H (Reprint); Rogers P L

AN 1996:134337 SCISEARCH

L109 ANSWER 18 OF 23 SCISEARCH COPYRIGHT (c) 2008 The Thomson Corporation on STN DPLICATE 12

TI Biosynthesis of poly-beta-hydroxyalkanoates by *Bacillus thuringiensis* R-510

SO JOURNAL OF MICROBIOLOGY, (MAR 1995) Vol. 33, No. 1, pp. 59-65.
ISSN: 1225-8873.

AU Lee K T (Reprint); Kim J Y; Rhee Y H; Bae K S; Kim Y B

AN 1996:101547 SCISEARCH

L109 ANSWER 19 OF 23 SCISEARCH COPYRIGHT (c) 2008 The Thomson Corporation on STN DPLICATE 13

TI DETERIORATION OF ENHANCED BIOLOGICAL PHOSPHORUS REMOVAL BY THE DOMINATION
OF MICROORGANISMS WITHOUT POLYPHOSPHATE ACCUMULATION
SO WATER SCIENCE AND TECHNOLOGY, (1994) Vol. 30, No. 6, pp. 203-211.
ISSN: 0273-1223.
AU SATOH H (Reprint); MINO T; MATSUO T
AN 1995:93510 SCISEARCH

L109 ANSWER 20 OF 23 HCAPLUS COPYRIGHT 2008 ACS on STN
TI Manufacture of polyhydroxyalkanoates from sugarcane sugars, by
fermentation with alcaligenes-containing microorganisms
SO Braz. Pedido PI, 36 pp.
CODEN: BPXXDX
IN Bueno Netto, Celso Lellis; Craveiro, Americo Martins; Pradella, Jose
Geraldo da Cruz; Oliveira, Margarette Simoes; Maiorano, Alfredo Eduardo;
Pinto, Armenio Gomes; Matsubara, Rosa Mitiko Saito
AN 1993:447616 HCAPLUS
DN 119:47616

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
BR 9103116	A	19930224	BR 1991-3116	19910716

L109 ANSWER 21 OF 23 HCAPLUS COPYRIGHT 2008 ACS on STN
TI Occurrence of poly-D(-)-3-hydroxyalkanoates in the genus Bacillus
SO FEMS Microbiology Letters (1991), 84(2), 173-6
CODEN: FMLED7; ISSN: 0378-1097
AU Chen, Guo Qiang; Koenig, Karl Heinz; Lafferty, Robert M.
AN 1992:18156 HCAPLUS
DN 116:18156

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TI Effect of community structure on the kinetics of anaerobic degradation of
aromatic compounds: Progress report, March 1989-November 1989
SO Report (1989), DOE/ER/14003-1; Order No. DE90003666, 4 pp. Avail.: NTIS
From: Energy Res. Abstr. 1990, 15(3), Abstr. No. 5903
AU McInerney, M. J.
AN 1990:464627 HCAPLUS
DN 113:64627

L109 ANSWER 23 OF 23 HCAPLUS COPYRIGHT 2008 ACS on STN
TI Behavior of aliphatic aldehydes in the Leuckart-Wallach reaction
SO Journal of the American Chemical Society (1950), 72, 3073-5
CODEN: JACSAT; ISSN: 0002-7863
AU DeBenneville, Peter L.; Macartney, Jane H.
AN 1950:52023 HCAPLUS
DN 44:52023
OREF 44:9914e-i,9915a-b

=> d ab tot

L109 ANSWER 1 OF 23 MEDLINE on STN DUPLICATE 1
AB A threonine overproducing mutant of Alcaligenes sp. SH-69 was isolated
and its ability to produce poly(3-hydroxybutyrate-co-3-hydroxyvalerate),
poly(3HB-co-3HV), was investigated. The 3HV fraction in poly(3HB-co-3HV)
produced from glucose as the sole carbon source exceeded 22 mol%, which is
approximately six times higher than that achieved by the wild type under
the same culture conditions. Furthermore, the addition of a
relatively low concentration (10 mM) of propionic acid, valeric
acid or levulinic acid to the glucose medium greatly increased the molar
fraction of 3HV in the copolyester, to 38-77 mol%. The results suggest
that metabolic engineering of the biosynthetic pathways supplying
polyhydroxyalkanoate monomers, such as the threonine biosynthetic
pathway, can lead to new poly(3HB-co-3HV)-producing strains.

L109 ANSWER 2 OF 23 SCISEARCH COPYRIGHT (c) 2008 The Thomson Corporation on

STN

DUPLICATE 2

AB The biosynthesis of poly(3-hydroxyalkanoate) (PHA) from waste edible oils and tallow by *Ralstonia eutropha* was investigated. Waste plant oils as well as waste tallow were assimilated-And successfully converted to PHA with relatively high yield by the bacterial fermentation. The waste plant oils usually gave poly(3-hydroxybutyrate) (PHB) while waste tallow gave poly(3-hydroxybutyrate-co-3-hydroxyvalerate) (PHBV). The ratio of 3-hydroxyvalerate (3HV) unit in the copolyester was controlled by the addition of sodium propionate to the cultivation medium containing waste plant oils as carbon sources. The ratio of PHA Accumulated was also quite high and up to 80% of the cell dry weight. The PHA accumulated was easily isolated by simply mixing the cells in aqueous sodium hypochlorite without using any organic solvents. We propose herein the biorecycling of waste oils as renewable resources for sustainable society.

L109 ANSWER 3 OF 23 HCAPLUS COPYRIGHT 2008 ACS on STN

AB In this work, sludge adapted to anaerobic/aerobic conditions, AN/AE, showing a high capacity of P accumulation, was submitted to aerobic dynamic substrate feeding (ADF). The fermenter was operated as a Sequencing Batch Reactor, with propionate as carbon substrate. Propionate is an important waste product from several industrial processes that can be valued, using it as a precursor for hydroxyvalerate in PHA production. Under the operational conditions used, apart from 3-hydroxyvalerate as its major component, 3-hydroxy-2-methylvalerate, 2-hydroxyisovalerate and 4-oxovalerate were also produced. A second reactor operated under the same conditions was adapted for the use of acetate as carbon substrate. The global metabolism of the organisms involved on PHA production, utilizing acetate or propionate, was studied using in vivo ^{13}C NMR.

L109 ANSWER 4 OF 23 MEDLINE on STN

DUPLICATE 3

AB Large amounts of homopolymers containing beta-hydroxybutyrate (PHB) and copolymers containing beta-hydroxyvalerate (P[HB-co-HV]) are produced by *Azotobacter chroococcum* strain H23 when growing in culture media amended with alpechin (wastewater from olive oil mills) as the sole carbon source. Copolymer was formed when valerate (pentanoate) was added as a precursor to the alpechin medium, but it was not formed with the addition of propionate as a precursor. *A. chroococcum* formed homo- and copolymers of polyhydroxyalkanoates (PHAs) up to 80% of the cell dry weight, when grown on NH_4^+ -medium supplemented with 60% (v/v) alpechin, after 48 h of incubation at 100 rev min $^{-1}$ and 30 degrees C. Production of PHAs by strain H23 using alpechin looks promising, as the use of a cheap substrate for the production of these materials is essential if bioplastics are to become competitive products.

L109 ANSWER 5 OF 23 MEDLINE on STN

DUPLICATE 4

AB *Azotobacter vinelandii* UWD produced 0.69 g.l $^{-1}$ poly(hydroxybutyrate-co-hydroxyvalerate, PHBV) with 7.9 mol% hydroxyvalerate (HV) from twofold-diluted swine wastewater (SW). When supplemented with 20 g.l $^{-1}$ glucose, twofold-diluted SW increased copolymer production by 8.6 times. When three organic acids (acetate, propionate and butyrate) present in SW were supplemented with 20 g.l $^{-1}$ glucose, PHBV production was comparable (5.5 g.l $^{-1}$) to that in the case of using twofold-diluted SW supplemented with 20 g.l $^{-1}$ glucose. However, the HV level (1.1-1.3 mol%) was very low. The component in SW contributing to copolymer production was found to be valerate. By 20 mM valerate 0.2 g.l $^{-1}$ PHBV with 44.6 mol% HV was produced. With 30 g.l $^{-1}$ glucose supplementation, 4.0 g.l $^{-1}$ PHBV with 22 mol% HV was produced. The optimal ratios of carbon to phosphorus (C : P) and to nitrogen (C : N) were 165 : 1 and 22 : 1, respectively.

L109 ANSWER 6 OF 23 SCISEARCH COPYRIGHT (c) 2008 The Thomson Corporation on STN

AB The effects of propionic acid feeding strategy on production of poly(3-hydroxybutyrate-co-3-hydroxyvalerate) [P(3HB-co-3HV)] were studied with *Ralstonia eutropha*. Flask culture revealed that the time and concentration of propionic acid addition had significant effects on cell growth, P(3HB-co-3HV) synthesis, and HV fraction in the copolymer. In fed-batch culture, a low ratio of propionic acid to glucose (P/G) led to high dry cell weight (DCW), P(3HB-co-3HV) content and productivity, but low HV unit fraction. A high P/G ratio led to, on the other hand, high HV unit fraction but the low P(3HB-co-3HV) content and productivity. The specific P(3HB-co-3HV) synthetic rate and the specific HV synthetic rate declined in fed-batch cultures, which deteriorated with high P/G feeding due to the inhibitory effect of propionic acid accumulated in the culture broth. According to the non-steady state synthesis of P(3HB-co-3HV) by *R. eutropha*, an optimal feeding strategy to control the propionic acid accumulation was developed and demonstrated. The propionic acid feeding rate was reduced with time, and DCW, P(3HB-co-3HV) concentration, P(3HB-co-3HV) content and HV fraction in P(3HB-co-3HV) reached 52.1 g l⁻¹, 40.8 g l⁻¹, 78.3% and 16.2 mol%, respectively. P(3HB-co-3HV) productivity was 0.74 g l⁻¹ h⁻¹. (C) 2001 Elsevier Science B.V. All rights reserved.

L109 ANSWER 7 OF 23 LIFESCI COPYRIGHT 2008 CSA on STN DUPLICATE 5

AB A metabolic model for the stoichiometry of acetate uptake under anaerobic conditions by an enriched culture of glycogen accumulating organisms (GAOs) was developed and tested by experimental studies. Glycogen served as the source of both reducing power and energy to drive the process of acetate uptake. The amount of glycogen consumed and poly- beta -hydroxyvalerate (PHV) accumulated in the cells increased with increasing pH, indicating that the energy requirements for acetate uptake increased with pH. The composition of the accumulated poly- beta -hydroxyalkanoates (PHAs) was adequately predicted using the assumption that acetyl-CoA and propionyl-CoA condense randomly to produce PHA. In addition, the rate of acetate uptake was strongly affected by the pH. The rate decreased with increasing pH and this dependence could be described with a saturation type of expression. A comparison of the rate of acetate uptake at low pH with the rates observed in enriched cultures of phosphorus accumulating organisms (PAOs) indicated that GAOs are able to compete effectively with PAOs in nutrient removal systems under certain conditions.

L109 ANSWER 8 OF 23 MEDLINE on STN DUPLICATE 6

AB In situ poly(hydroxyalkanoate) (PHA) levels and repeating-unit compositions were examined in stratified photosynthetic microbial mats from Great Sippewissett Salt Marsh, Mass., and Ebro Delta, Spain. Unlike what has been observed in pure cultures of phototrophic bacteria, the prevalence of hydroxyvalerate (HV) repeating units relative to hydroxybutyrate (HB) repeating units was striking. In the cyanobacteria-dominated green material of Sippewissett mats, the mole percent ratio of repeating units was generally 1HB:1HV. In the purple sulfur bacteria-dominated pink material the relationship was typically 1HB:2HV. In Sippewissett mats, PHA contributed about 0.5 to 1% of the organic carbon in the green layer and up to 6% in the pink layer. In Ebro Delta mats, PHA of approximately 1HB:2HV-repeating-unit distribution contributed about 2% of the organic carbon of the composite photosynthetic layers (the green and pink layers were not separated). Great Sippewissett Salt Marsh mats were utilized for more extensive investigation of seasonal, diel, and exogenous carbon effects. When the total PHA content was normalized to organic carbon, there was little seasonal variation in PHA levels. However, routine daily variation was evident at all sites and seasons. In every case, PHA levels increased during the night and decreased during the day. This phenomenon was conspicuous in the pink layer, where PHA levels doubled overnight. The daytime declines could be inhibited by artificial shading. Addition of exogenous acetate, lactate, and propionate induced two- to fivefold increases in the total

PHA levels when applied in the daylight but had no effect when applied at night. The distinct diel pattern of in situ PHA accumulation at night appears to be related, in some phototrophs, to routine dark energy metabolism and is not influenced by the availability of organic nutrients.

L109 ANSWER 9 OF 23 SCISEARCH COPYRIGHT (c) 2008 The Thomson Corporation on STN DUPLICATE 7

AB With the objective of verifying the influence of oleic acid as a nutritional supplement in the production of poly(3-hydroxybutyrate-co-3-hydroxyvalerate) by *Ralstonia eutropha*, cultures were established with 0.3 g oleic acid l(-1) and without this supplement, in 30 g inverted sugar l(-1) and 1 g propionic acid l(-1). The use of this supplement increased the accumulation of polymer from 18.3% to 28.3% (w/w) although the mass of 3-hydroxyvalerate in the polymer remained constant for both cultures.

L109 ANSWER 10 OF 23 MEDLINE on STN DUPLICATE 8

AB A 3.0-kb genomic fragment has been isolated from *Rhodospirillum rubrum* (ATCC 25903) that contains an open reading frame (ORF) with strong homology to other known polyhydroxyalkanoate (PHA) synthase genes. This ORF has lower homology to the *R. rubrum* strain Ha PHA synthase than would be expected within the same species. We have conducted a series of heterologous expression studies evaluating the in vivo substrate specificity of PHA synthase genes from *Rhodobacter sphaeroides*, *Ralstonia eutropha* (formerly *Alcaligenes eutrophus*), *Thiocystis violacea*, and *Nocardia corrallina*, within the PHA-synthase-negative hosts, *Ralstonia eutropha* DSM541 and *Pseudomonas putida* GpP104. The *N. corrallina* PHA synthase incorporated the highest percentage of C5 monomers in the polymer when fermented in medium supplemented with 0.1% heptanoate as the sole carbon source. When the *T. violacea* and *R. sphaeroides* were expressed in the PHA-negative host DSM541, a greater percentage of C5 monomer was observed in the polymer as compared to the expression of the PHA synthase of *R. eutropha*, when the transconjugants were fermented in medium supplemented with 0.4% propionate. Evaluation for preference of medium-chain-length monomers demonstrated the flexibility of the *N. corrallina*, *T. violacea*, and *R. eutropha* synthase genes to polymerize a copolyester composed of short- and medium-chain-length monomers when the respective transconjugants were fermented in medium supplemented with 0.5% octanoate. These studies demonstrate that the PHA synthase from *N. corrallina*, *T. violacea*, and *R. eutropha* are able to polymerize a copolyester composed of short- and medium-chain-length monomers, while the PHA synthase from *R. sphaeroides* lacks this ability and only produces a short-chain-length polymer. These observations suggest that the composition of the PHA from the PHA-producing organisms does not necessarily reflect the inherent specificity of the PHA synthase.

L109 ANSWER 11 OF 23 BIOTECHDS COPYRIGHT 2008 THE THOMSON CORP. on STN

AB The regulation of the molar fraction of 4-hydroxybutyrate (4-HB) in poly(3-hydroxybutyrate-4-hydroxybutyrate) (P(3HB-4HB)) biosynthesis by *Ralstonia eutropha* was attempted by the supplemental addition of propionic acid. The molar fraction of 4-HB in P(3HB-4HB) was increased from 12.3 to 51.8 mol% by the addition of a small amount of propionate along with gamma-butyrolactone, which is commonly used as a precursor for the biosynthesis of P(3HB-4HB). The mechanism of regulation by propionate was examined by measuring the variation of enzyme activities related to the biosynthesis of the copolymer and the level of acetyl-CoA, an intermediate metabolite. Poly-beta-hydroxybutyrate-synthase activity was induced by propionate, and the acetyl-CoA concentration also increased. The overflowing acetyl-CoA appeared to cause an inhibitory effect on the ketolysis reaction catalyzing the lysis of 4-hydroxybutyryl-CoA to 2

molecules of acetyl-CoA, so that the 4-HB fraction available for polymerization increased. Thus, the molar fraction of 4-HB in P(3HB-4HB) was regulated by increased 4-HB fraction and an activated PHB-synthase when propionate was used as a stimulator. (14 ref)

L109 ANSWER 12 OF 23 BIOTECHDS COPYRIGHT 2008 THE THOMSON CORP. on STN
AB A new method for waste-water treatment involve bio-flocculation and produces a microbial polyester as a product. After the waste is treated it is put into a fermentor, where nitrogen is introduced and is maintained for a certain period of time to give propagatable bacteria. A micro quantity of conditioning agent is added to regulate the pH to 7-8 and a microquantity of oxygen is added to encourage microaerophilic culture for a certain period of time and then aerobic culture for a certain period of time. Sodium acetate or sodium propionate and glucose are added together with continuous addition of compressed air to aid the aerobic culture. The poly-beta-hydroxyalkanoate formed is extracted from the culture.. The method is simple and the operation is convenient, low cost and easily scaled-up.

L109 ANSWER 13 OF 23 SCISEARCH COPYRIGHT (c) 2008 The Thomson Corporation on STN
DUPLICATE 9

AB Polyhydroxyalkanoates (PHAs) are a class of carbon and energy storage polymers produced by numerous bacteria in response to environmental limitation. The type of polymer produced depends on the carbon sources available, the flexibility of the organism's intermediary metabolism, and the substrate specificity of the PHA biosynthetic enzymes. *Ralstonia eutropha* produces both the homopolymer poly-beta-hydroxybutyrate (PHB) and, when provided with the appropriate substrate, the copolymer poly(beta-hydroxybutyrate-co-beta-hydroxyvalerate) (PHBV). A required step in production of the hydroxyvalerate moiety of PHBV is the condensation of acetyl coenzyme A (acetyl-CoA) and propionyl-CoA to form beta-ketovaleryl-CoA. This activity has generally been attributed to the beta-ketothiolase encoded by *R. eutropha* phbA. However, we have determined that PhbA does not significantly contribute to catalyzing this condensation reaction. Here we report the cloning and genetic analysis of bktB, which encodes a beta-ketothiolase from *R. eutropha* that is capable of forming beta-ketovaleryl-CoA. Genetic analyses determined that BktB is the primary condensation enzyme leading to production of beta-hydroxyvalerate derived from propionyl-CoA. We also report an additional beta-ketothiolase, designated BMC, that probably serves as a secondary route toward beta-hydroxyvalerate production.

L109 ANSWER 14 OF 23 SCISEARCH COPYRIGHT (c) 2008 The Thomson Corporation on STN
DUPLICATE 10

AB *Azotobacter salinestris*, a sodium-dependent, microaerophilic N-2-fixing soil bacterium, formed polyhydroxyalkanoate copolymers comprised of beta-hydroxybutyric acid and 9-12 mol% beta-hydroxyvaleric acid (HV) during growth on sugars. Increased HV content was achieved by feeding valeric acid to the culture growing on glucose, but propionic acid could be directed to HV formation only when it served as the sole C source. Polymer production in nitrogen-fixing cells was increased at higher aeration, provided that a complex organic nitrogen source was also present, but there was no HV in the polymer. HV production was increased to 28 mol% in nitrogen-fixing cells when aeration was lower and acetate was provided with glucose in the medium. Enzymes leading to the production of polyhydroxyalkanoate copolymers were found to be similar in *A. salinestris* and *Azotobacter vinelandii*, but *A. vinelandii* is unable to form HV from propionate or from sugars without valeric acid addition. A biochemical scheme is proposed for the production of HV in *A. salinestris*, whereby the glyoxylate bypass assimilates acetate to generate succinate, which may be converted into propionyl-CoA for HV synthesis. The results suggest that it may be possible to control the molar yield of HV formed from sugars by *A. salinestris*.

AB WO 1996025509 A1 UPAB: 20050513

Poly-3-hydroxyalkanoate (PHA) is produced from at least one aliphatic carboxylic acid or hydrolysable derivative thereof (A) that has low solubility in water, by (a) providing a nutrient medium containing assimilable cpds. of phosphorus in amount corresponding to the requirement of the bacterial cells to be grown, and of nitrogen, sulphur, and trace elements; (b) inoculating with cells of *Alcaligenes*; (c) providing assimilable carbon (B) in amount corresponding to the quantity of cells to be grown; (d) aerobically fermenting while monitoring pH and adjusting by addition of ammonia and/or alkali metal cpds., until cell growth stops or slows substantially; then (e) aerobically fermenting by feeding (A) while monitoring pH and adjusting as before, until a design quantity of PHA has been produced; and (f) recovering the PHA.

USE - Recovered PHA is of use in melt-processing or solvent processing, or as a latex for use as coating or adhesive.

ADVANTAGE - PHA is provided in high yield and/or output rate. Any species or strain of *Alcaligenes* may be used.

L109 ANSWER 16 OF 23 SCISEARCH COPYRIGHT (c) 2008 The Thomson Corporation on STN

AB The preparation of novel fluorinated poly(beta-hydroxyalkanoates), PHAs, was carried out using *Pseudomonas oleovorans* (ATCC 29347) and *Pseudomonas putida* (KT 2442) as biocatalysts. These organisms were first grown on 40 mM sodium citrate prior to studying polymer formation in the second stage using 1:1 molar mixtures of nonanoic acid (NA) and fluorinated acid cosubstrates. The following fluoro acids were synthesized and used in this study: 6,6,6-trifluorohexanoic acid (TFHxA), 6,6,7,7,8,8,8-heptafluorooctanoic acid (HpFOA), 6,6,7,7,8,8,9,9,9-nonafluorononanoic acid (INFNA), and 6,6,7,7,8,8,9,9,10,10,11,11,11-tridecafluoroundecanoic acid (TDFUDA). In general, the use of NA/fluoro acid cosubstrate mixtures instead of only NA in second-stage cultivations resulted in little to no cellular toxicity as measured by values of colony-forming units per milliliter. The mol percent incorporations of fluorinated side chains was determined by H-1 and F-19 NMR spectroscopies, and peak assignments were made using two-dimensional reverse-detected heteronuclear multiplet quantum correlation (HMQC) as well as H-1-H-1 correlation spectroscopy (COSY). *P. putida* formed PHA after a 3-day second-stage cultivation time with 17.3 mol % fluorinated side chains using NA/INFNA as cosubstrates. For shorter second-stage cultivation times (1 day) where product yields were relatively higher, 0.3 g/L of product was formed that contained 6.4 mol % fluoroalkanoate side groups using *P. oleovorans* as the biocatalyst and NA/HpFOA as cosubstrates. The incorporation of 12.4 mol % fluoroalkanoate repeat units resulted in products which showed melting at higher temperatures (55-80 degrees C), crystallized at faster rates from the melt, and had higher heats of fusion. Investigation of the surface free energy of products by surface contact angle measurements showed only a modest increase from 87 to 94 degrees for PHAs containing 0 and 17.3 mol % fluorinated side chains.

L109 ANSWER 17 OF 23 SCISEARCH COPYRIGHT (c) 2008 The Thomson Corporation on STN

DUPLICATE 11

AB Following growth of *Alcaligenes* sp. SH-69 on glucose as a sole carbon source for the production of poly-beta-hydroxyalkanoates (PHAs), relatively low levels of levulinic acid (LA) were detected. Experiments were carried out in batch and continuous culture, and the effects of LA addition on growth and PHA synthesis were determined. Significant stimulatory effects were observed, greater than those for propionic acid addition. In N-limited two stage continuous culture, a maximal PHA content of 38.3% (w/w) was achieved with a polyhydroxyvalerate (PHV) content of 23.5% (molar basis) at D=0.078 1/h. This resulted from, the controlled addition of LA at 0.5 g/L/h in the presence of excess glucose.

L109 ANSWER 18 OF 23 SCISEARCH COPYRIGHT (c) 2008 The Thomson Corporation on
STN DUPLICATE 12

AB Synthesis and accumulation of poly-beta-hydroxyalkanoate (PHA) in *Bacillus thuringiensis* R-510 isolated from soil were investigated. This organism was resistant to relatively high concentration of propionate and had a capability of accumulating copolymers consisting of 3-hydroxybutyrate (3HB) and 3-hydroxyvalerate (3HV) when the medium was supplemented with propionate as a precursor. The PHA content maximally reached up to 44.5% of dry cell weight in the presence of 0.1% propionate. The molar fraction of 3HV in the copolymer was increased from 19.4 to 80.2 mol% by adding 0.05 to 0.5% propionate to glucose medium. The addition of propionate during exponential or stationary phase of cell growth was less effective for the enhancement of 3HV content in the copolymer, although cell mass and PHA content were not affected by the time of propionate addition. PHB homopolymer and copolymer produced by *B. thuringiensis* R-510 were measured to have number average molecular weights in the range of 53,000 to 65,000. Polydispersity indices were between 1.5 and 2.2. Some of the produced polymers had bimodal molecular weight distributions.

L109 ANSWER 19 OF 23 SCISEARCH COPYRIGHT (c) 2008 The Thomson Corporation on
STN DUPLICATE 13

AB Enhanced biological phosphorus removal by anaerobic-aerobic operation is not always achieved successfully. In this study, microbial metabolism in the activated sludge of a failed enhanced biological phosphorus removal process was investigated to clarify the cause of the failure. The dominant microorganisms in the sludge consumed carbohydrates in the uptake process of acetate or propionate under anaerobic conditions and accumulated polyhydroxyalkanoate. But significant release of phosphate was not observed because polyphosphate was not utilized. Consumed carbohydrates were found to have been converted to polyhydroxyalkanoate via propionyl-CoA in addition to acetyl-CoA, indicating that the microorganisms had enzymes to convert phosphoenolpyruvate or pyruvate produced in glycolysis to propionyl-CoA. The propionate fermentation was supposed to work as the sink of the reducing power excessively produced in glycolysis; thus while maintaining the redox balance, microorganisms were able to get energy not from polyphosphate but from glycogen. The difference in the metabolic systems between polyphosphate accumulating bacteria and the present microorganisms may give hints to avoid the deterioration of enhanced biological phosphorus removal.

L109 ANSWER 20 OF 23 HCAPLUS COPYRIGHT 2008 ACS on STN

AB Polyhydroxyalkanoates (PHAs) are manufactured from sugarcane sugars, such as byproducts of sucrose or alc. manufacture, by submerged fermentation with *Alcaligenes*, using a two-stage process. In the 1st stage, bacterial growth is ensured by a medium rich in nutrients. In the 2nd stage, a N-poor medium is supplemented with propionic acid, pentanoic acid, or other precursors of PHAs different from polyhydroxybutyrates. The PHAs are separated and purified using solvents, surfactants and enzymes.

L109 ANSWER 21 OF 23 HCAPLUS COPYRIGHT 2008 ACS on STN

AB A range of *Bacillus* strains were examined for their ability to accumulate poly-D(-)-3-hydroxyalkanoates (poly-HAKs) which are naturally occurring materials that are optically active, biodegradable thermoplastics. The organisms could produce poly-D(-)-3-hydroxybutyrate (poly-HB) up to 50% of cell dry weight. The content of poly-HB in the cells varied with the growth conditions. The addition of propionate or valerate in the culture resulted in a synthesis of poly-D(-)-3-hydroxyvalerate (poly-HV). All the strains tested had the ability to synthesize the co-polyester poly-HB-co-HV.

L109 ANSWER 22 OF 23 HCAPLUS COPYRIGHT 2008 ACS on STN DUPLICATE 14

AB The kinetics of PhCO₂- degradation by Syntrophus buswellii grown in coculture with Desulfovibrio strain G-11 was determined At low PhCO₂- concns. the rate of degradation deviated from that predicted by a 1st-order decay process and reached a threshold of 2 - 3 μM PhCO₂. S. buswellii was adapted to grow with crotonate and expts. are in progress to isolate this bacterium. An anaerobic bacterium was isolated that catalyzed the cleavage of an aryl ether bond of phenoxyacetate and its chlorinated derivs. forming the resp. phenol. The anaerobic fatty acid-degrading bacterium, Syntrophomonas wolfei, catalyzed a rapid HCO₂--HCO₃- exchange reaction and slowly degraded HCO₂-. Enzymic studies showed that the levels of hydrogenase in cell-free exts. of S. wolfei grown in pure culture or in coculture with Methanospirillum hungatei contained very high specific activities of hydrogenase. HCO₂- dehydrogenase activity was present, but the activity was 700 - 900-fold less than hydrogenase activity. S wolfei Was adapted to grow with mono- and di-unsatd. fatty acids 5 - 6 carbons in length. Anal. of the fermentation products showed that part of the substrate was β-oxidized while remainder was reduced to the corresponding saturated fatty acid. Propionate was produced from a hexadienoate suggesting that another pathway in addition to β-oxidation exists for the degradation of this compound Labeling studies and anal. of the monomeric composition of poly-β-hydroxyalkanoate (PHA) in S. wolfei showed that early in growth PHA was made by the incorporation of an intermediate without cleavage of a C-C bond. Later, PHA was made by a pathway in equilibrium with the OAc- pool.

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AB The Leuckart-Wallach reaction with aliphatic aldehydes and secondary amines is initiated at a generally lower temperature than in the case of ketones and aromatic aldehydes and generally gives good yields of products. A possible explanation is the involvement of the H on the α-C atom of the aldehyde through an enamine intermediate. The following compds. were used: Aldehydes, EtCHO (I), PrCHO (II), iso-PrCHO (III), C₆H₁₃CHO (IV), BuEtCHCHO (V), Me₃CCH₂CHMeCH₂CHO (VI); ketones, cyclohexanone (VII), PhAc (VIII); amines, morpholine (IX), piperidine (X), Me₂NH (XI), (iso-Pr)₂NH (XII), (HOC₂H₄)₂NH (XIII), MeNHC₉H₁₉ (XIV), and PhNHMe (XV). The enamines were prepared by the method of Mannich and Davidsen (C.A. 30, 8217.2), with anhydrous K₂CO₃ or CaO as catalyst and temps. of 5-50°; the intermediate diimine was converted to the enamine by distillation One mol. of the enamine is treated dropwise with 1-1.1 mols. 98% HCO₂H, heated 1-2 h. at 50-70° (occasionally at 90°), poured into dilute HCl, extracted with ether, made basic with NaOH, and again extracted with ether. Enamines, Satd amine; Aldehyde, Amine, Yield, %, B.p., °C., Mm., Yield, %, B.p., °C., Mm.; II, IX, 95, 105-10, 20, 54, 94-9, 25; III, IX, 29, 89-93, 20, 73, 80-5, 20; IV, IX, 76, 91-4, 2, 32, 90-5, 2; V, X, 60, 111-12, 3, 84, 78-82, 1; VI, IX, 41, 95-115, 1, 60, 81, 0.7; VII, XI, 42, 46-50, 1, 80, 46, 1.5; VI, XII, 23, 79-81, 2, 62, 98-100, 4; VI, IX, 79, 107-10, 3, 85, 81-3, 2; VI, XIII, 52, 105-10, 0.7, 84, 147-50, 1.3; VI, XIV, 70, 117-21, 1, 57, 124-33, 1.5; In carrying out the Leuckart-Wallach alkylations, 1 mol. of the amine was added to 1 mol. HCO₂H, the temperature raised to 60°, and the aldehyde added dropwise (1 h.); the mixture was then heated about 1 h. on the steam bath; for I and II, the amine-HCO₂H ratio was 1:2. The following reactions are reported: Aldehyde, Amine, Yield, %, B.p., °C., Mm.; I, IX, 5, 78-82, 35; II, XI, 60, 94-6, 760; II, IX, 34, 95-8, 22; III, XI, 59, 70-6, 760; III, IX, 57, 80-4, 15; IV, IX, 46, 76-87, 1; V, XI, 60, 88-90, 20; VI, XI, 84, 52-5, 3; VI, XII, 47, 85-8, 2; VI, XIV, 54, 115-21, 1.5; VI, XV, 17, 117-40, 1.7; VII, X, 25, 113-15, 18; VIII, X, 0, -, -;

=> log y

COST IN U.S. DOLLARS

FULL ESTIMATED COST

SINCE FILE
ENTRY
193.31

TOTAL
SESSION
193.52

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)

SINCE FILE

TOTAL

ENTRY

SESIÓN

CA SUBSCRIBER PRICE

-4.00

-4.00

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